

AS
--113 mL of 1.6 M *n*-BuLi solution (0.18 mol) was added to a solution of 31.3 g of 2-methyl-4-bromo-thiophene (0.177 mol) in 150 mL of ether at -70°C under stirring. The resulting solution was kept under stirring at -60 to -70°C for 30 min and then was added of 22.3 g of 2-methyl-4-formyl-thiophene (0.177 mol) in 100 mL of ether. The mixture was allowed to warm to room temperature, then neutralized with 10% aqueous solution of NH₄Cl and washed with water. The organic phase was separated and evaporated. The crude bis(2-methyl-4-thienyl)methanol (or 2,2'-dimethyl-4,4'-dithienyl carbinol) was obtained.--

Please replace the paragraph beginning at page 44, line 23, and ending at page 45, line 2 with the following paragraph:

AL6
1022200-1022200
--A suspension of 35.5 g of AlCl₃ (0.266 mol) in 100 mL of ether was added slowly to a suspension of 10 g of LiAlH₄ (0.266 mol) in 100 mL of ether. The resulting mixture was treated with the solution of the carbinol (obtained as described above) in 100 mL ether. The reaction mixture was refluxed for additional 1 h, cooled to room temperature and subsequently added of 100 mL of ethyl acetate. Then it was treated with 300 mL of water and 300 mL of ether. The organic phase was collected, washed with water, dried by MgSO₄ and evaporated off. The residue was distilled at 90 to 110°C/0.5 mmHg. Yield 23.2 g (63%). The title compound was characterized by ¹H-NMR spectroscopy.--

In the Claims

Please amend claims 1-25, 27, and 29-32 to read as follows:

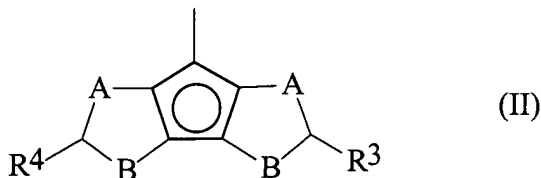
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--1. (Amended) A metallocene compound of general formula (I):



wherein

L is a divalent group bridging the moieties G and Z, selected from CR^1R^2 , SiR^1R^2 or $(\text{CR}^1\text{R}^2)_2$, wherein R^1 and R^2 , which may be the same as or different from each other, are hydrogen, a $\text{C}_1\text{-C}_{20}$ -alkyl, $\text{C}_3\text{-C}_{20}$ -cycloalkyl, $\text{C}_2\text{-C}_{20}$ -alkenyl, $\text{C}_6\text{-C}_{20}$ -aryl, $\text{C}_7\text{-C}_{20}$ -alkylaryl, or $\text{C}_7\text{-C}_{20}$ -arylalkyl radical, optionally containing a heteroatom, which can form a ring having 3 to 8 atoms optionally bearing a substituent;

Z is a moiety of formula (II):

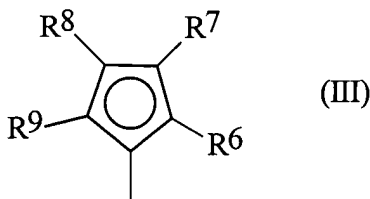


wherein

R^3 and R^4 , which may be the same as or different from each other, are hydrogen, a $\text{C}_1\text{-C}_{20}$ -alkyl, $\text{C}_3\text{-C}_{20}$ -cycloalkyl, $\text{C}_2\text{-C}_{20}$ -alkenyl, $\text{C}_6\text{-C}_{20}$ -aryl, $\text{C}_7\text{-C}_{20}$ -alkylaryl, or $\text{C}_7\text{-C}_{20}$ -arylalkyl radical, optionally containing a heteroatom;

A and B are sulfur (S), oxygen (O) or CR^5 , wherein R^5 is hydrogen, a $\text{C}_1\text{-C}_{20}$ -alkyl, $\text{C}_3\text{-C}_{20}$ -cycloalkyl, $\text{C}_2\text{-C}_{20}$ -alkenyl, $\text{C}_6\text{-C}_{20}$ -aryl, $\text{C}_7\text{-C}_{20}$ -alkylaryl, or $\text{C}_7\text{-C}_{20}$ -arylalkyl radical, optionally containing a heteroatom with the proviso that if A is S or O, then B is CR^5 or if B is S or O, then A is CR^5 , and wherein the rings containing A and B have a double bond in the allowed position;

G is a moiety of formula (III):



wherein

R^6 , R^7 , R^8 and R^9 , which may be the same as or different from each other, are hydrogen, a $\text{C}_1\text{-C}_{20}$ -alkyl, $\text{C}_3\text{-C}_{20}$ -cycloalkyl, $\text{C}_2\text{-C}_{20}$ -alkenyl, $\text{C}_6\text{-C}_{20}$ -aryl, $\text{C}_7\text{-C}_{20}$ -alkylaryl, or $\text{C}_7\text{-C}_{20}$ -arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and at least one of substituent pairs R^6 and R^7 , and R^8 and R^9 can form a ring comprising from 3 to 8

atoms, optionally bearing substituents, with the proviso that R^7 is different from R^8 and when R^7 is a tert-butyl radical, R^8 is not hydrogen;

M is an atom of a transition metal selected from those belonging to group 3, 4, 5, 6 or to the lanthanide or actinide groups in the Periodic Table of the Elements,

X, which may be the same or different, is a hydrogen atom, halogen atom, a group R^{10} , OR^{10} , OSO_2CF_3 , $OCOR^{10}$, SR^{10} , NR^{10}_2 or PR^{10}_2 , wherein the substituents R^{10} are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl,

C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing heteroatoms;

p is an integer of from 1 to 3, being equal to the oxidation state of the metal M minus 2;

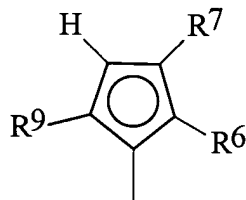
with the proviso that said metallocene compound is different from:

isopropylidene (3-trimethylsilylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, dimethylsilanediyl (3-trimethylsilylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, isopropylidene (3-ethylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, dimethylsilanediyl (3-ethylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, isopropylidene (3-n-butylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, dimethylsilanediyl (3-n-butylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, isopropylidene (3-methylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, dimethylsilanediyl (3-methylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, isopropylidene (3-i-propylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride and dimethylsilanediyl (3-i-propylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride.

2. (Amended) The metallocene according to claim 1, wherein the transition metal M is selected from titanium, zirconium or hafnium.
3. (Amended) The metallocene according to claim 1, wherein L is CMe_2 or $SiMe_2$.
4. (Amended) The metallocene according to claim 1, wherein A or B is a sulfur atom and the other is a CH group.
5. (Amended) The metallocene according to claim 1, wherein R^3 and R^4 are the same

and are a C₁-C₂₀-alkyl group, which can contain a silicon atom.

6. (Amended) The metallocene according to claim 1, wherein G is a moiety of formula (IIIa):



(IIIa)

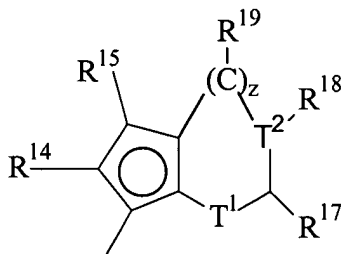
wherein

R⁶ and R⁹ equal to or different from each other, are hydrogen, a C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements;

R⁷ is a C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl or a QR¹¹R¹²R¹³ group, wherein Q is C, Si, or Ge;

R¹¹, R¹² and R¹³, which may be the same as or different from each other, are hydrogen, C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radicals, optionally containing a heteroatom, with the proviso that when Q is a carbon atom, at least one of R¹¹, R¹² and R¹³ is a hydrogen atom.

7. (Amended) The metallocene according to claim 6, wherein R⁷ is a phenyl, a CHR¹¹R¹² or a SiR¹¹R¹²R¹³ group, wherein R¹¹, R¹² and R¹³ are hydrogen or C₁-C₂₀-alkyl groups.
8. (Amended) The metallocene according to claim 1, wherein G is a moiety of formula (IV):



(IV)

wherein

T¹ is a sulfur atom or a CR¹⁶ group;

T² is a carbon atom or a nitrogen atom;

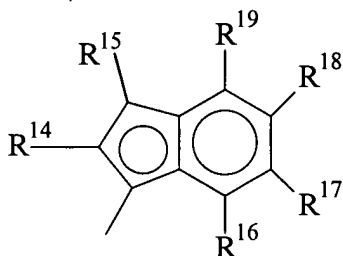
z is 1 or 0;

the ring containing T¹ and T² has double bonds in the allowed position;

with the proviso that if z is 1, T¹ is a CR¹⁶ group and T² is a carbon atom and the ring formed is a benzene ring; and if z is 0, T² bonds directly the cyclopentadienyl ring, the 5 membered ring formed has double bond in any of the allowed positions having an aromatic character and T¹ and T² are not at the same time, a sulfur atom and a nitrogen atom.

R¹⁴, R¹⁵, R¹⁶, R¹⁷, R¹⁸ and R¹⁹, same or different, are hydrogen, a C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, any of two adjacent R¹⁴, R¹⁵, R¹⁶, R¹⁷, R¹⁸ and R¹⁹ can form a ring comprising 4 to 8 atoms optionally bearing substituents.

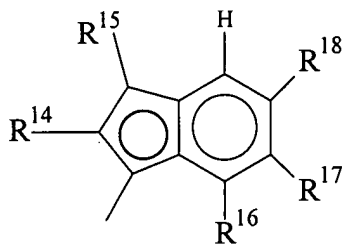
9. (Amended) The metallocene according to claim 8, wherein G is a moiety of formula (IVa):



(IVa)

wherein R¹⁴, R¹⁵, R¹⁶, R¹⁷, R¹⁸ and R¹⁹, which may be the same as or different from each other, are hydrogen, a C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing heteroatoms, and any of two adjacent R¹⁴, R¹⁵, R¹⁶, R¹⁷, R¹⁸ and R¹⁹ can form a ring comprising 4 to 8 atoms optionally bearing substituents and the benzene ring optionally being perhydrated.

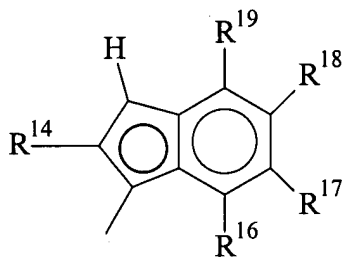
10. (Amended) The metallocene according to claim 9, wherein G is a moiety of formula (IVb)



(IVb)

wherein R^{15} , R^{16} , R^{17} , and R^{18} are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and any of two adjacent R^{15} , R^{16} , R^{17} , R^{18} can form a ring comprising 4 to 8 atoms optionally bearing substituents; R^{14} being a C_1 - C_{20} -alkyl or C_6 - C_{20} -aryl group.

11. (Amended) The metallocene according to claim 9, wherein G is a moiety of formula (IVc)

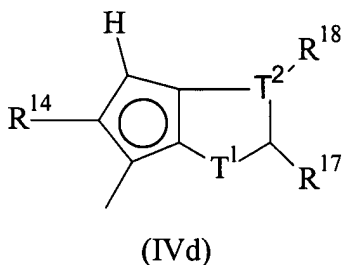


(IVc)

wherein R^{14} , R^{16} , R^{17} , and R^{18} are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and optionally any of two adjacent R^{16} , R^{17} , and R^{18} can form a ring comprising 4 to 8 atoms optionally bearing substituents; R^{19} is a C_1 - C_{20} -alkyl or C_6 - C_{20} -aryl group or forms with R^{18} a benzene ring optionally bearing substituents.

12. (Amended) The metallocene according to claim 11, wherein R^{14} is a C_1 - C_{20} -alkyl or C_6 - C_{20} -aryl group.
13. (Amended) The metallocene according to claim 11, wherein R^{16} is a C_1 - C_{20} -alkyl or C_6 - C_{20} -aryl.

14. (Amended) The metallocene according to claim 8, wherein G is a moiety of formula (IVd):



wherein

T¹ is a sulfur atom or a CR¹⁶ group;

T² is a carbon atom or a nitrogen atom;

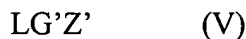
the 5 member ring formed by T¹ and T² has double bonds in any of the allowed positions, having an aromatic character;

with the proviso that if T¹ is a sulphur atom T² is not a nitrogen atom;

R¹⁴, R¹⁷ and R¹⁸ which may be the same as or different from each other, are hydrogen, a C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements and R¹⁷ and R¹⁸ can form a ring comprising 4 to 8 atoms optionally bearing substituents.

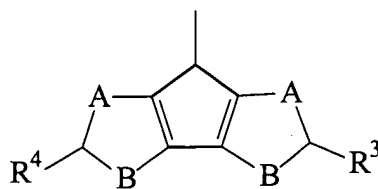
15. (Amended) The metallocene according to claim 14 wherein T² is a carbon atom; T¹ is a sulphur atom and R¹⁴, R¹⁷ and R¹⁸ equal to or different from each other are a C₁-C₂₀-alkyl, or C₆-C₂₀-aryl.

16. (Amended) A ligand of formula (V):



wherein L is a divalent group bridging the moieties G and Z, selected from CR¹R², SiR¹R² or (CR¹R²)₂, wherein R¹ and R², which may be the same as or different from each other, are hydrogen, a C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing a heteroatom, and can form a ring having 3 to 8 atoms optionally bearing a substituent;

Z' is a moiety of formula (VI):



(VI)

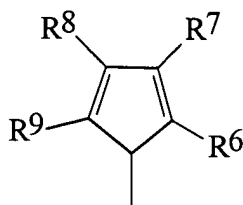
or its double bond isomers;

wherein the double bonds are in any of the allowed positions;

R^3 and R^4 , which may be the same as or different from each other, are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing a heteroatom;

A and B are sulfur (S), oxygen (O) or CR^5 , wherein R^5 is hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing a heteroatom with the proviso that if A is S or O, then B is CR^5 or if B is S or O, then A is CR^5 , and wherein the rings containing A and B have a double bond in the allowed position;

G' is a moiety of formula (VII):



(VII)

or its double bond isomers;

wherein

R^6 , R^7 , R^8 and R^9 , which may be the same as or different from each other, are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and at least one of substituent pairs R^6 and R^7 , and R^8 and R^9 can form a ring comprising from 3 to 8 atoms, optionally bearing substituents, with

the proviso that R^7 is different from R^8 and when R^7 is a tert-butyl radical, R^8 is not hydrogen.

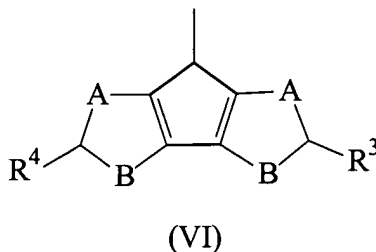
17. (Amended) A process for the preparation of a ligand of formula (V):



wherein

L is a divalent group bridging the moieties G and Z, selected from CR^1R^2 , SiR^1R^2 or $(CR^1R^2)_2$, wherein R^1 and R^2 , which may be the same as or different from each other, are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing a heteroatom, and can form a ring having 3 to 8 atoms optionally bearing a substituent;

Z' is a moiety of formula (VI):



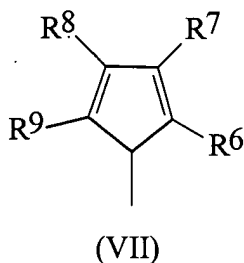
or its double bond isomers;

wherein the double bonds are in any of the allowed positions;

R^3 and R^4 , which may be the same as or different from each other, are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing a heteroatom;

A and B are sulfur (S), oxygen (O) or CR^5 , wherein R^5 is hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing a heteroatom with the proviso that if A is S or O, then B is CR^5 or if B is S or O, then A is CR^5 , and wherein the rings containing A and B have a double bond in the allowed position;

G' is a moiety of formula (VII):



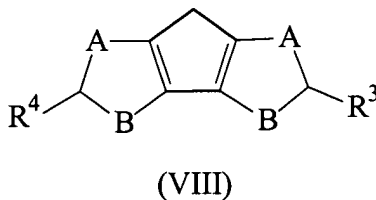
or its double bond isomers;

wherein

R⁶, R⁷, R⁸ and R⁹, which may be the same as or different from each other, are hydrogen, a C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and at least one of substituent pairs R⁶ and R⁷, and R⁸ and R⁹ can form a ring comprising from 3 to 8 atoms, optionally bearing substituents, with the proviso that R⁷ is different from R⁸ and when R⁷ is a tert-butyl radical, R⁸ is not hydrogen;

comprising the following steps:

- a) contacting a compound of the formula (VIII) with a base selected from the group consisting of metallic sodium and potassium, sodium and potassium hydroxide and an organic lithium compound, wherein the molar ratio between the compound of the formula (VIII) and said base is at least 1:1;

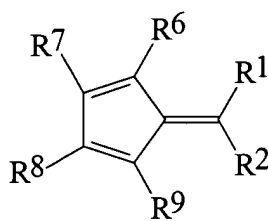


wherein

R³ and R⁴, which may be the same as or different from each other, are hydrogen, a C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing a heteroatom;

A and B are sulfur (S), oxygen (O) or CR⁵, wherein R⁵ is hydrogen, a C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing a heteroatom with the proviso that if A is S or O, then B is CR⁵ or if B is S or O, then A is CR⁵, and wherein the rings containing A and B have a double bond in the allowed position;

- b) contacting the obtained anionic compounds of the formula (VIII) from step a) with a compound of formula (IX):



(IX)

wherein

R¹ and R², which may be the same as or different from each other, are hydrogen, a C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing a heteroatom, and can form a ring having 3 to 8 atoms optionally bearing a substituent;

R⁶, R⁷, R⁸ and R⁹, which may be the same as or different from each other, are hydrogen, a C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and at least one of substituent pairs R⁶ and R⁷, and R⁸ and R⁹ can form a ring comprising from 3 to 8 atoms, optionally bearing substituents, with the proviso that R⁷ is different from R⁸ and when R⁷ is a tert-butyl radical, R⁸ is not hydrogen; and then

- (c) treating the obtained product from step b) with a protonating agent.

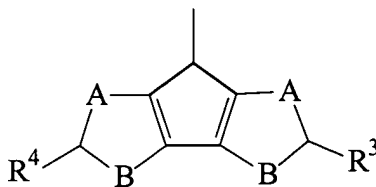
18. (Amended) A process for the preparation of a ligand of formula (V):

LG'Z' (V)

wherein

L is a divalent group bridging the moieties G and Z, selected from CR^1R^2 , SiR^1R^2 or $(CR^1R^2)_2$, wherein R^1 and R^2 , which may be the same as or different from each other, are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing a heteroatom, and can form a ring having 3 to 8 atoms optionally bearing a substituent;

Z' is a moiety of formula (VI):



(VI)

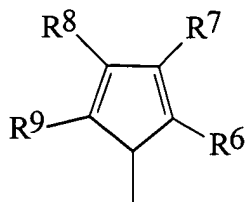
or its double bond isomers;

wherein the double bonds are in any of the allowed positions;

R^3 and R^4 , which may be the same as or different from each other, are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing a heteroatom;

A and B are sulfur (S), oxygen (O) or CR^5 , wherein R^5 is hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing a heteroatom with the proviso that if A is S or O, then B is CR^5 or if B is S or O, then A is CR^5 , and wherein the rings containing A and B have a double bond in the allowed position;

G' is a moiety of formula (VII):



(VII)

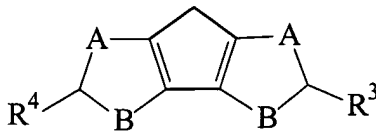
or its double bond isomers;

wherein

R^6 , R^7 , R^8 and R^9 , which may be the same as or different from each other, are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and at least one of substituent pairs R^6 and R^7 , and R^8 and R^9 can form a ring comprising from 3 to 8 atoms, optionally bearing substituents, with the proviso that R^7 is different from R^8 and when R^7 is a tert-butyl radical, R^8 is not hydrogen;

comprising the following steps:

- a) contacting a compound of the formula (VIII) with a base selected from the group consisting of metallic sodium and potassium, sodium and potassium hydroxide and an organic lithium compound, wherein the molar ratio between the compound of the formula (VIII) and said base is at least 1:1



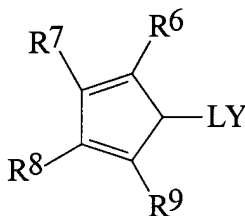
(VIII)

wherein

R^3 and R^4 , which may be the same as or different from each other, are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing a heteroatom; A and B are sulfur (S), oxygen (O) or CR^5 , wherein R^5 is hydrogen, a C_1 - C_{20} -alkyl,

C₃-C₂₀-cycloalkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing a heteroatom with the proviso that if A is S or O, then B is CR⁵ or if B is S or O, then A is CR⁵, and wherein the rings containing A and B have a double bond in the allowed position;

- b) contacting the obtained anionic compounds from step a) with a compound of formula (IX):



(IX)

wherein Y is a halogen radical selected from the group consisting of chloride, bromide and iodide;

L is a divalent group bridging the moieties G and Z, selected from CR¹R², SiR¹R² or (CR¹R²)₂, wherein R¹ and R², which may be the same as or different from each other, are hydrogen, a C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing a heteroatom, and can form a ring having 3 to 8 atoms optionally bearing a substituent;

R⁶, R⁷, R⁸ and R⁹, which may be the same as or different from each other, are hydrogen, a C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and at least one of substituent pairs R⁶ and R⁷, and R⁸ and R⁹ can form a ring comprising from 3 to 8 atoms, optionally bearing substituents, with the proviso that R⁷ is different from R⁸ and when R⁷ is a tert-butyl radical, R⁸ is not hydrogen.

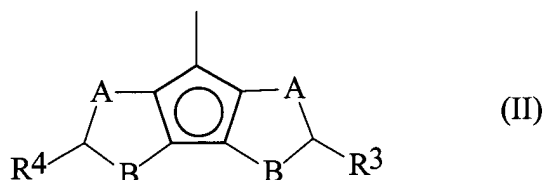
19. (Amended) A process for the preparation of a metallocene compound of general formula (I):



wherein

L is a divalent group bridging the moieties G and Z, selected from CR^1R^2 , SiR^1R^2 or $(\text{CR}^1\text{R}^2)_2$, wherein R^1 and R^2 , which may be the same as or different from each other, are hydrogen, a $\text{C}_1\text{-C}_{20}$ -alkyl, $\text{C}_3\text{-C}_{20}$ -cycloalkyl, $\text{C}_2\text{-C}_{20}$ -alkenyl, $\text{C}_6\text{-C}_{20}$ -aryl, $\text{C}_7\text{-C}_{20}$ -alkylaryl, or $\text{C}_7\text{-C}_{20}$ -arylalkyl radical, optionally containing a heteroatom, and can form a ring having 3 to 8 atoms optionally bearing a substituent;

Z is a moiety of formula (II):

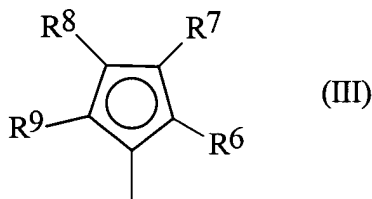


wherein

R^3 and R^4 , which may be the same as or different from each other, are hydrogen, a $\text{C}_1\text{-C}_{20}$ -alkyl, $\text{C}_3\text{-C}_{20}$ -cycloalkyl, $\text{C}_2\text{-C}_{20}$ -alkenyl, $\text{C}_6\text{-C}_{20}$ -aryl, $\text{C}_7\text{-C}_{20}$ -alkylaryl, or $\text{C}_7\text{-C}_{20}$ -arylalkyl radical, optionally containing a heteroatom;

A and B are sulfur (S), oxygen (O) or CR^5 , wherein R^5 is hydrogen, a $\text{C}_1\text{-C}_{20}$ -alkyl, $\text{C}_3\text{-C}_{20}$ -cycloalkyl, $\text{C}_2\text{-C}_{20}$ -alkenyl, $\text{C}_6\text{-C}_{20}$ -aryl, $\text{C}_7\text{-C}_{20}$ -alkylaryl, or $\text{C}_7\text{-C}_{20}$ -arylalkyl radical, optionally containing a heteroatom with the proviso that if A is S or O, then B is CR^5 or if B is S or O, then A is CR^5 , and wherein the rings containing A and B have a double bond in the allowed position;

G is a moiety of formula (III):



wherein

R^6 , R^7 , R^8 and R^9 , which may be the same as or different from each other, are hydrogen, a $\text{C}_1\text{-C}_{20}$ -alkyl, $\text{C}_3\text{-C}_{20}$ -cycloalkyl, $\text{C}_2\text{-C}_{20}$ -alkenyl, $\text{C}_6\text{-C}_{20}$ -aryl,

C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and at least one of substituent pairs R⁶ and R⁷, and R⁸ and R⁹ can form a ring comprising from 3 to 8 atoms, optionally bearing substituents, with the proviso that R⁷ is different from R⁸ and when R⁷ is a tert-butyl radical, R⁸ is not hydrogen;

M is an atom of a transition metal selected from those belonging to group 3, 4, 5, 6 or to the lanthanide or actinide groups in the Periodic Table of the Elements,

X, which may be the same or different, is a hydrogen atom, halogen atom, a group R¹⁰, OR¹⁰, OSO₂CF₃, OCOR¹⁰, SR¹⁰, NR¹⁰₂ or PR¹⁰₂, wherein the substituents R¹⁰ are hydrogen, a C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing heteroatoms; p is an integer of from 1 to 3, being equal to the oxidation state of the metal M minus 2; with the proviso that said metallocene compound is different from:

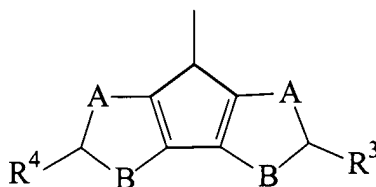
isopropylidene (3-trimethylsilylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride, dimethylsilanediyl (3-trimethylsilylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride, isopropylidene (3-ethylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride, dimethylsilanediyl (3-ethylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride, isopropylidene (3-n-butylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride, dimethylsilanediyl (3-n-butylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride, isopropylidene (3-methylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride, dimethylsilanediyl (3-methylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride, isopropylidene (3-i-propylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride and dimethylsilanediyl (3-i-propylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride;

said process comprising contacting the ligand of general formula (V)



wherein L is a divalent group bridging the moieties G and Z, selected from CR^1R^2 , SiR^1R^2 or $(\text{CR}^1\text{R}^2)_2$, wherein R^1 and R^2 , which may be the same as or different from each other, are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing a heteroatom, and can form a ring having 3 to 8 atoms optionally bearing a substituent;

AM
Z' is a moiety of formula (VI):



(VI)

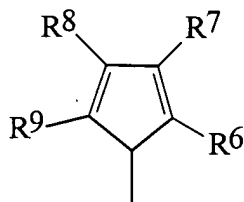
or its double bond isomers;

wherein the double bonds are in any of the allowed positions;

R^3 and R^4 , which may be the same as or different from each other, are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing a heteroatom;

A and B are sulfur (S), oxygen (O) or CR^5 , wherein R^5 is hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing a heteroatom with the proviso that if A is S or O, then B is CR^5 or if B is S or O, then A is CR^5 , and wherein the rings containing A and B have a double bond in the allowed position;

G' is a moiety of formula (VII):



(VII)

or its double bond isomers;

wherein R^6 , R^7 , R^8 and R^9 , which may be the same as or different from each other, are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and at least one of substituent pairs R^6 and R^7 , and R^8 and R^9 being capable of forming a ring comprising from 3 to 8 atoms, optionally having substituents, with the proviso that R^7 is different from R^8 and when R^7 is a tert-butyl radical, R^8 is not hydrogen;

with a base capable of forming a corresponding dianionic compound and thereafter with a compound of general formula MX_{p+2} , wherein

M is an atom of a transition metal selected from those belonging to group 3, 4, 5, 6 or to the lanthanide or actinide groups in the Periodic Table of the Elements,

X, which may be the same or different, is a hydrogen atom, halogen atom, a group R^{10} , OR^{10} , OSO_2CF_3 , $OCOR^{10}$, SR^{10} , NR^{10}_2 or PR^{10}_2 , wherein the substituents R^{10} are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing heteroatoms; and

p is an integer of from 1 to 3, being equal to the oxidation state of the metal M minus 2.

20. (Amended) A catalyst obtained by contacting:

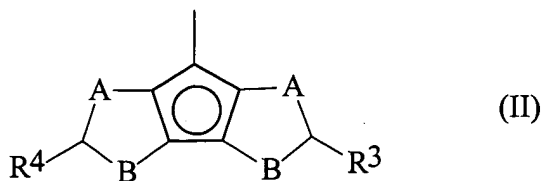
(A) a metallocene compound of formula (I)



wherein

L is a divalent group bridging the moieties G and Z, selected from CR^1R^2 , SiR^1R^2 or $(CR^1R^2)_2$, wherein R^1 and R^2 , which may be the same as or different from each other, are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing a heteroatom, and can form a ring having 3 to 8 atoms optionally bearing a substituent;

Z is a moiety of formula (II):



wherein

R^3 and R^4 , which may be the same as or different from each other, are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing a heteroatom;

A and B are sulfur (S), oxygen (O) or CR^5 , wherein R^5 is hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing a heteroatom with the proviso that if A is S or O, then B is CR^5 or if B is S or O, then A is CR^5 , and wherein the rings containing A and B have a double bond in the allowed position;

M is an atom of a transition metal selected from those belonging to group 3, 4, 5, 6 or to the lanthanide or actinide groups in the Periodic Table of the Elements,

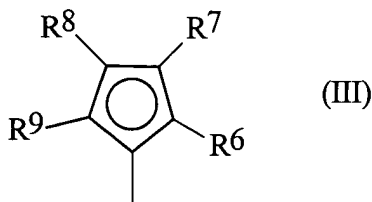
X, which may be the same or different, is a hydrogen atom, halogen atom, a group R^{10} , OR^{10} , OSO_2CF_3 , $OCOR^{10}$, SR^{10} , NR^{10}_2 or PR^{10}_2 , wherein the substituents R^{10} are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing heteroatoms;

p is an integer of from 1 to 3, being equal to the oxidation state of the metal M minus 2;

with the proviso that said metallocene compound is different from:

isopropylidene (3-trimethylsilylcyclopentadienyl)(7-cyclopentadienyl)zirconium dichloride, dimethylsilanediyl (3-trimethylsilylcyclopentadienyl)(7-cyclopentadienyl)zirconium dichloride, isopropylidene (3-ethylcyclopentadienyl)(7-cyclopentadienyl)zirconium dichloride, dimethylsilanediyl (3-ethylcyclopentadienyl)(7-cyclopentadienyl)zirconium dichloride, isopropylidene (3-n-butylcyclopentadienyl)(7-cyclopentadienyl)zirconium dichloride, dimethylsilanediyl (3-n-butylcyclopentadienyl)(7-cyclopentadienyl)zirconium dichloride, isopropylidene (3-methylcyclopentadienyl)(7-

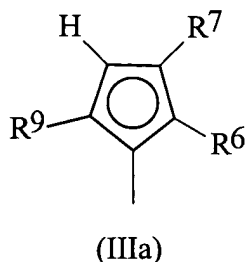
cyclopentadiene)zirconium dichloride, dimethylsilanediyl (3-methylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride, isopropylidene (3-i-propylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride and dimethylsilanediyl (3-i-propylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride;
and G is a moiety of formula (III):



wherein R⁶, R⁷, R⁸ and R⁹, which may be the same as or different from each other, are hydrogen, a C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, at least one of substituent pairs R⁶ and R⁷, and R⁸ and R⁹ can form a ring comprising from 3 to 8 atoms, optionally bearing substituents; with the proviso that R⁷ is different from R⁸ and when R⁷ is a tertbutyl radical R⁸ is not hydrogen; and

(B) at least one of an alumoxane and a compound capable of forming an alkyl metallocene.

21. (Amended) The catalyst according to claim 20 wherein in the metallocene compound of formula (I) G is a moiety of formula (IIIa)



wherein

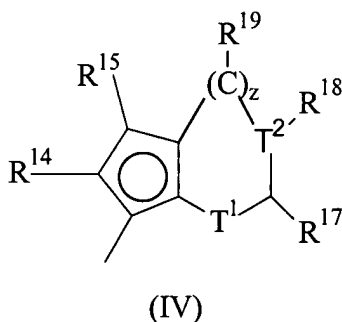
R⁶ and R⁹ equal to or different from each other, are hydrogen, a C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical,

optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements

R^7 is a C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl or a $QR^{11}R^{12}R^{13}$ group, wherein Q is C, Si, or Ge;

R^{11} , R^{12} and R^{13} , which may be the same as or different from each other, are hydrogen, C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radicals, optionally containing a heteroatom, with the proviso that when Q is a carbon atom, at least one of R^{11} , R^{12} and R^{13} is a hydrogen atom,

or formula (IV)



wherein

T^1 is a sulfur atom or a CR^{16} group;

T^2 is a carbon atom or a nitrogen atom;

z is 1 or 0;

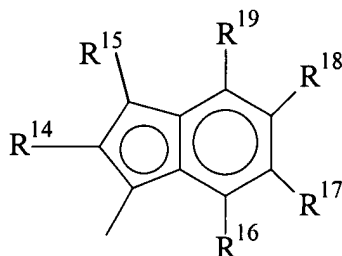
the ring containing T^1 and T^2 has double bonds in the allowed position;

with the proviso that if z is 1, T^1 is a CR^{16} group and T^2 is a carbon atom and the ring formed is a benzene ring; and if z is 0, T^2 bonds directly the cyclopentadienyl ring, the 5 membered ring formed has double bond in any of the allowed positions having an aromatic character and T^1 and T^2 are not at the same time, a sulfur atom and a nitrogen atom.

R^{14} , R^{15} , R^{16} , R^{17} , R^{18} and R^{19} , same or different, are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, any of two adjacent R^{14} , R^{15} , R^{16} , R^{17} , R^{18} and R^{19} can form a ring comprising 4 to

8 atoms optionally bearing substituents.

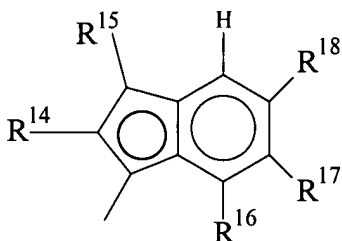
22. (Amended) The catalyst according to claim 21 wherein in the metallocene compound of formula (I) G is a moiety selected from the compound of formula (IVa),



(IVa)

wherein R¹⁴, R¹⁵, R¹⁶, R¹⁷, R¹⁸ and R¹⁹, which may be the same as or different from each other, are hydrogen, a C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing heteroatoms, and any of two adjacent R¹⁴, R¹⁵, R¹⁶, R¹⁷, R¹⁸ and R¹⁹ can form a ring comprising 4 to 8 atoms optionally bearing substituents and the benzene ring optionally being perhydrated,

formula (IVb),

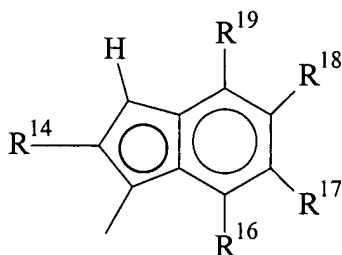


(IVb)

wherein R¹⁵, R¹⁶, R¹⁷, and R¹⁸ are hydrogen, a C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements,

and any of two adjacent R^{14} , R^{15} , R^{16} , R^{17} , R^{18} can form a ring comprising 4 to 8 atoms optionally bearing substituents; R^{14} being a C_1 - C_{20} -alkyl or C_6 - C_{20} -aryl group,

formula (IVc),

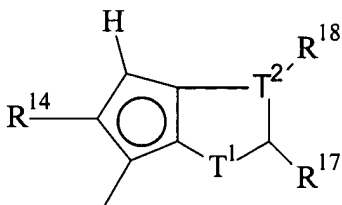


(IVc)

wherein R^{14} , R^{16} , R^{17} , and R^{18} are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and optionally any of two adjacent R^{14} , R^{16} , R^{17} , R^{18} and R^{19} can form a ring comprising 4 to 8 atoms optionally bearing substituents;

R^{19} is a C_1 - C_{20} -alkyl or C_6 - C_{20} -aryl group or forms with R^{18} a benzene ring optionally having substituents.

or formula (IVd)



(IVd)

wherein

T^1 is a sulfur atom or a CR^{16} group;

T^2 is a carbon atom or a nitrogen atom;

the 5 member ring formed by T¹ and T² has double bonds in any of the allowed positions, having an aromatic character;

with the proviso that if T¹ is a sulphur atom T² is not a nitrogen atom;

R¹⁴, R¹⁷ and R¹⁸ which may be the same as or different from each other, are hydrogen, a C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements and R¹⁷ and R¹⁸ can form a ring comprising 4 to 8 atoms optionally bearing substituents.

23. (Amended) The catalyst according to claim 20, wherein said alumoxane is selected from methylalumoxane (MAO), isobutylalumoxane (TIBAO) or 2,4,4-trimethyl-pentylalumoxane (TIOAO).

24. (Amended) The catalyst according to claim 20, wherein the compound capable of forming a metallocene alkyl cation is a compound of formula D⁺E⁻, wherein D⁺ is a Brønsted acid, able to donate a proton and to react irreversibly with a substituent X of the metallocene of formula (I) and E⁻ is a compatible anion, which is able to stabilize the active catalytic species originating from the reaction of the two compounds, and which is sufficiently labile to be able to be removed by an olefinic monomer.

25. (Amended) A process for the preparation of a polymer of alpha-olefins comprising contacting one or more alpha-olefins under polymerization conditions with a catalyst obtained by contacting:

(A) a metallocene compound of formula (I)



wherein

L is a divalent group bridging the moieties G and Z, selected from CR¹R², SiR¹R² or (CR¹R²)₂, wherein R¹ and R², which may be the same as or different from each other, are hydrogen, a C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing a heteroatom, and can form a ring having 3 to 8 atoms optionally bearing a substituent;

Z is a moiety of formula (II):



(II)

[illegible]

M is an atom of a transition metal selected from those belonging to group 3, 4, 5, 6 or to the lanthanide or actinide groups in the Periodic Table of the Elements,

X, which may be the same or different, is a hydrogen atom, halogen atom, a group R^{10} , OR^{10} , OSO_2CF_3 , $OCOR^{10}$, SR^{10} , NR^{10}_2 or PR^{10}_2 , wherein the substituents R^{10} are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing heteroatoms;

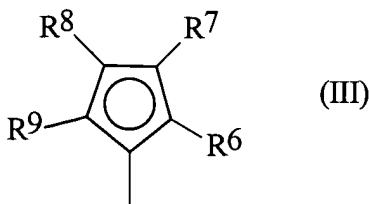
p is an integer of from 1 to 3, being equal to the oxidation state of the metal M minus 2;

with the proviso that said metallocene compound is different from:

isopropylidene (3-trimethylsilylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, dimethylsilanediyl (3-trimethylsilylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, isopropylidene (3-ethylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, dimethylsilanediyl (3-ethylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, isopropylidene (3-n-butylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, dimethylsilanediyl (3-n-butylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, isopropylidene (3-methylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride,

dimethylsilanediyl (3-methylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, isopropylidene (3-i-propylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride and dimethylsilanediyl (3-i-propylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride;

and G is a moiety of formula (III):



wherein R^6 , R^7 , R^8 and R^9 , which may be the same as or different from each other, are hydrogen, a C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl, or C_7 - C_{20} -arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, at least one of substituent pairs R^6 and R^7 , and R^8 and R^9 can form a ring comprising from 3 to 8 atoms, optionally bearing substituents; with the proviso that R^7 is different from R^8 and when R^7 is a tertbutyl radical R^8 is not hydrogen; and

(B) at least one of an alumoxane and a compound capable of forming an alkyl metallocene.

27. (Amended) The process according to claim 26 wherein the process is carried out in the presence of an alpha-olefin selected from 1-butene, 1-pentene, 1-hexene, 4-methyl-1-pentene, 1-octene, 1-decene or 1-dodecene.

29. (Amended) The process according to claim 28, wherein the process is carried out in the presence of an olefin selected from propylene, 1-butene, 1-pentene, 4-methyl-1-pentene, 1-hexene, 1-octene, 4,6-dimethyl-1-heptene, 1-decene, 1-dodecene, 1-tetradecene, 1-hexadecene, 1-octadecene, 1-eicosene, allylcyclohexane, cyclopentene, cyclohexene and norbornene, 1,5-hexadiene, 1-6-heptadiene, 2-methyl-1,5-hexadiene, trans 1,4-hexadiene, cis 1,4-hexadiene, 6-methyl-1,5-heptadiene, 3,7-dimethyl-1,6-octadiene, 11-methyl-1,10-dodecadiene, or 5-ethylidene-2-norbornene.

30. (Amended) The process according to claim 25 wherein the catalyst is supported on